ABSTRACT OF THE DISCLOSURE

A system and method for obtaining improved performance of chemical laser systems by exercising control over the radiation environments of these devices. Proper control of the AERE is achieved through the control of the wall construction including the choice of materials, placement and contours, the control of the wall temperatures (separately from the gas phase temperature), and the use of optical filters or added radiation sources, to achieve a synergistic optimum performance that demonstrates superior performance characteristics beyond that which could be achieved without the control of the AERE. This control is exercised through the proper application of anti-reflecting coatings for those spectral ranges that need to be mitigated and reflecting coatings for those frequencies that need to be augmented. The determination of these frequencies is made through the application of a novel mathematical model to the kinetic processes of the laser system.